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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.				
10/779,920	02/17/2004	Dae-Hyuk Chung	SAM-0532	9020				
7590 04/18/2007								
Steven M. Mills MILLS & ONELLO LLP Suite 605 Eleven Beacon Street Boston, MA 02108		<table border="1"><tr><td>EXAMINER</td></tr><tr><td>MARKOFF, ALEXANDER</td></tr></table>			EXAMINER	MARKOFF, ALEXANDER		
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		<table border="1"><tr><td>ART UNIT</td><td>PAPER NUMBER</td></tr><tr><td>1746</td><td></td></tr></table>			ART UNIT	PAPER NUMBER	1746	
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1746								
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE						
3 MONTHS	04/18/2007	PAPER						

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/779,920	CHUNG ET AL.	
	Examiner	Art Unit	
	Alexander Markoff	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/06 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The applicants amended the claims to recite that the solution is diluted only by deionized water. The claims as amended are indefinite because it is not clear what is required by the recitation of "only" especially in combination with the term "solution". It is not clear how the term "diluted by only deionized water" limits the term "an aqueous solution", which does not exclude any ingredients.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 8, 9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 63-271938.

JP 63-271938 teaches a method as claimed. The method comprises treatment of the substrates as claimed by immersing or spraying with a solution of sulfuric acid in conjunction with action of ultrasonic and spinning. See entire document, especially pages 5, 7 and 9-12 of the translation.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 5-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63-271938.

JP 63-271938 teaches the claimed method except for duration of cleaning, temperature of cleaning, applied power and rotation speed.

The claimed operation parameters are result effective variables. It would have been obvious to an ordinary artisan at the time the invention was made to determine optimum values for the result effective variables by routine experimentation.

10. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Delehanty et al (US Patent No 5,780,363) in view of JP 63-271938.

Delehanty et al teach cleaning substrates as claimed with solutions as claimed at the claimed temperature for the claimed period of time. They also teach rinsing the substrates with water and drying the substrates. See entire document, especially, columns 2-3.

Delehanty et al do not specifically teach the details of the application of the solutions. The document is silent regarding megasonic and spinning.

JP 63-271938 teaches that it was known to conduct liquid cleaning of the similar substrates with similar chemicals by immersion and/or spraying and to enhance the cleaning by application of ultrasonic and rotation. It would have been obvious to an ordinary artisan at the time the invention was made to use the conventional way to apply chemicals and enhance cleaning disclosed by JP 63-271938 in the method of Delehanty et al with reasonable expectation of adequate results because JP 63-271938 teaches such for cleaning the same substrates.

It would have also been obvious to an ordinary artisan at the time the invention was made to find an optimum power of the ultrasonic in the modified method of Delehanty et al by routine experimentation depending from the size and type of the equipment used.

Response to Arguments

11. Applicant's arguments filed 11/30/06 have been fully considered but they are not persuasive.

The applicants again argue that the applied JP document does not teach diluted sulfuric acid.

This is not persuasive because the acid is diluted at least to some extend. It is noted that most of the claims do not require any degree of dilution.

The applicants further argue that the JP document does not teach application of a solution diluted by only deionized water.

This is not persuasive because the claims recite that an aqueous sulfuric acid solution is what is diluted. The term "a solution" does not exclude any ingredients. The solution recited by the JP document comprises water and meets the claimed limitations directed to the solution.

The applicants argue that the rejection made over Delehanty et al is not proper because the applied document teaches the use of a solution comprising sulfuric acid, deionized water and peroxide.

This is not persuasive because the claims do not exclude the use of solutions of sulfuric acid comprising additional chemicals.

It is again noted that the claims recite that an aqueous sulfuric acid solution is what is diluted. The term "a solution" does not exclude any ingredients. The solution recited by the JP document comprises water.

It is also noted that the applicants admitted that Delehanty et al teach that the applied solution comprises deionized water.

In response to applicant's arguments against the teaching of Delehanty et al individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In the instant case the teaching of the JP document was used to show that it was known to conduct liquid cleaning of the similar substrates with similar chemicals by

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immersion and/or spraying and to enhance the cleaning by application of ultrasonic and rotation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alexander Markoff
Primary Examiner
Art Unit 1746

AM

**ALEXANDER MARKOFF
PRIMARY EXAMINER**